CLAIMS

1. A transmitting apparatus for transmitting data to a receiving apparatus, comprising:

receiving means for receiving control information transmitted from the receiving apparatus;

controlling means for controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting means for transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus.

2. The transmitting apparatus as set forth in claim 1,

wherein said controlling means controls the resolutions in the temporal direction and the spatial direction of the picture data transmitted to the receiving apparatus corresponding to the control information.

3. The transmitting apparatus as set forth in claim 1,

wherein said transmitting means transmits the data to the receiving apparatus through a predetermined transmission path at a predetermined transmission rate, and

wherein said controlling means controls the resolutions of the data corresponding to the control information so that the transmission rate of the data does not exceed the predetermined transmission rate.

4. The transmitting apparatus as set forth in claim 1,

wherein the receiving apparatus outputs the data transmitted from said transmitting means,

wherein the control information contains a considered point of the data that is output to the receiving apparatus, and

wherein said controlling means improves the resolutions of a considered area that contains the considered point of the data corresponding to the control information.

5. The transmitting apparatus as set forth in claim 4,

all

wherein said transmitting means transmits picture data to the receiving apparatus through a predetermined transmission path at a predetermined transmission rate,

wherein the receiving apparatus displays the picture data transmitted from said transmitting means,

wherein the control information contains a temporal and special position of the picture data displayed by the receiving apparatus, and

wherein said controlling means improves the

spatial resolution of a considered area that contains the temporal and spatial position of the picture data and deteriorates the temporal resolution corresponding to the control information so that the transmission rate of the picture data does not exceed the predetermined transmission rate.

6. The transmitting apparatus as set forth in claim 5, further comprising:

background picture data extracting means for extracting background picture data from the picture data transmitted to the receiving apparatus,

wherein said controlling means improves the spatial resolution of the background picture data when the temporal and spatial position contained in the control information represents the background picture data.

7. The transmitting apparatus as set forth in claim 6, further comprising:

object picture data extracting means for extracting object picture data from the picture data corresponding to the difference between the picture data and the background picture data transmitted to the receiving apparatus ,

wherein said controlling means improves the spatial resolution of the object picture data when the temporal and spatial position contained in the control information represents the object picture data.

8. The transmitting apparatus as set forth in claim 7, further comprising:

combining means for combining the background picture data and the object picture as combined data,

wherein said transmitting means transmits the combined data to the receiving apparatus.

9. The transmitting apparatus as set forth in claim 1, further comprising:

inputting means for inputting the data.

10. The transmitting apparatus as set forth in claim 9,

wherein the data is picture data, and

wherein said inputting means is photographing means for photographing a picture and outputting the picture data.

11. The transmitting apparatus as set forth in claim 1,

wherein the transmitting apparatus is a portable telephone.

12. The transmitting apparatus as set forth in claim 1, further comprising:

analyzing means for analyzing the preferences of the user of the receiving apparatus,

wherein said controlling means controls the resolutions of the data corresponding to the analyzed result of said analyzing means.

13. The transmitting apparatus as set forth in

claim 12,

wherein the receiving apparatus outputs the data transmitted from said transmitting means,

wherein said controlling means contains a considered point of the data that is output to the receiving apparatus, and

wherein said analyzing means analyzes the preferences of the user corresponding to the considered point.

14. The transmitting apparatus as set forth in claim 13,

wherein said analyzing means has:

feature amount extracting means for extracting a feature amount of a considered area that contains a considered point of the data; and

area detecting means for detecting a predetermined area corresponding to the preference of the user from the data corresponding to the feature amount, and

wherein said controlling means controls the resolutions of the predetermined area of the data.

15. The transmitting apparatus as set forth in claim 14, further comprising:

histogram storing means for storing a histogram of the future amount,

wherein said area detecting means detects the predetermined area corresponding to the histogram.

16. The transmitting apparatus as set forth in claim 14,

wherein said transmitting means transmits picture data to the receiving apparatus through a predetermined transmission path at a predetermined transmission rate,

wherein the receiving apparatus displays the picture data transmitted from said transmitting means, and

wherein said controlling means improves the spatial resolution of the predetermined area of the picture data and deteriorates the temporal resolution so that the transmission rate of the picture data does not exceed the predetermined transmission rate.

17. The transmitting apparatus as set forth in claim 15,

wherein said area detecting means detects an area having the same as or similar to the feature amount with the largest frequency of the histogram as the predetermined area.

18. The transmitting apparatus as set forth in claim 17,

wherein said transmitting means transmits picture data to the receiving apparatus through a predetermined transmission path at a predetermined transmission rate,

wherein the receiving apparatus displays the

picture data transmitted from said transmitting means, and

wherein said controlling means improves the spatial resolution of the predetermined area of the picture data and deteriorates the temporal resolution so that the transmission rate of the picture data does not exceed the predetermined transmission rate.

19. The transmitting apparatus as set forth in claim 16,

wherein said feature amount extracting means extracts at least one of motion information, depth information, position information, color information, and shape information of a considered area that contains the considered point of the picture data as the feature amount.

20. The transmitting apparatus as set forth in claim 19,

wherein said feature amount extracting means extracts a plurality of motion information, depth information, position information, color information, and shape information of a considered area that contains the considered point of the picture data as a plurality of feature amounts, and generates a feature amount vector composed of the plurality of feature amounts.

21. The transmitting apparatus as set forth in claim 13,

wherein said analyzing means has:

categorizing means for categorizing the data corresponding to a considered area that contains the considered point of the data,

wherein said analyzing means analyzes the preference of the user corresponding to the analyzed result of said categorizing means.

22. The transmitting apparatus as set forth in claim 21,

wherein the data is picture data,

wherein said analyzing means has:

still area and moving area determining means for determining whether the considered area of the picture data is a still area or a moving area; and

continuity determining means for determining whether the considered point is continuous in the temporal and spatial directions of the considered point, and

wherein said categorizing means categorizes the picture data corresponding to the determined results of the still area and moving area determining means and said continuity determining means.

23. The transmitting apparatus as set forth in claim 22, further comprising:

considered point storing means for storing a considered point that is contained in the considered area that is still and that is continuous in the

temporal and spatial directions and a considered point that is contained in the considered area that is moving and that is continuous in the temporal and spatial directions; and

category identifier adding means for obtaining a category identifier added to a considered point stored to the said considered point storing means and adding the category identifier to the considered point.

24. The transmitting apparatus as set forth in claim 23,

wherein in the case that the current considered point is in the considered area that is still and that is continuous in the temporal and spatial directions, when an immediately preceding considered point stored in said considered point storing means is contained in the considered area that is still and that is continuous in the temporal and spatial directions, said category identifier adding means obtains a category identifier added to the current considered point corresponding to the relation of the spatial positions between the current considered point and the area that contains the immediately preceding considered point.

25. The transmitting apparatus as set forth in claim 24,

wherein in the case that the current

considered point is in the considered area that is moving and that is continuous in the temporal and spatial directions, when an immediately preceding considered point stored in said considered point storing means is contained in the considered area that is moving and that is continuous in the temporal and spatial directions, said category identifier adding means obtains a category identifier added to the current considered point corresponding to the similarity of a predetermined feature amount of the considered area that contains the current considered point and that of the considered area that contains the immediately preceding considered point.

26. The transmitting apparatus as set forth in claim 23,

wherein said categorizing means categorizes a predetermined area of the picture data as an object corresponding to the preference of the user corresponding to the density of considered points stored in said considered point storing means.

27. The transmitting apparatus as set forth in claim 26,

wherein said categorizing means categorizes a predetermined area of the picture data as an object corresponding to the preference of the user corresponding to the density of considered points assigned the same category identifier, stored in said

considered point storing means, and contained in the considered area that is still.

28. The transmitting apparatus as set forth in claim 26,

wherein said categorizing means categorizes a predetermined area of the picture data as an object corresponding to the preference of the user corresponding to the density of considered points stored in said considered point storing means, contained in the considered area that is moving, assigned the same category identifier, and motion compensated.

29. The transmitting apparatus as set forth in claim 22,

wherein said still area and moving area determining means determines whether a considered area that contains the current considered point is still or moving corresponding to the difference between the considered area that contains the considered point of the current frame and the considered area that contains the considered point of a past frame.

30. The transmitting apparatus as set forth in claim 22,

wherein said continuity determining means determines whether or not the current considered point is continuous in the temporal and spatial directions corresponding to the time difference between the

current considered point and a past considered point.

31. The transmitting apparatus as set forth in claim 26,

wherein said controlling means improves the resolutions of the area categorized as the object.

32. The transmitting apparatus as set forth in claim 22,

wherein said continuity determining means determines whether or not the current considered point is continuous corresponding to the distances in the temporal direction and the spatial direction between the current considered point and a past considered point at which the same still area and moving area determined result as the considered area that contains the current considered point is obtained.

33. The transmitting apparatus as set forth in claim 32,

wherein said categorizing means categorizes the picture data corresponding to weighted values for the distances in the temporal direction and the spatial direction.

34. The transmitting apparatus as set forth in claim 33, further comprising:

picture data storing means for storing picture data in the considered area that contains a considered point that is continuous in the temporal direction and the spatial direction.

35. The transmitting apparatus as set forth in claim 34,

wherein when the current considered point is not continuous in the temporal direction and the spatial direction, after the content of said picture data storing means is read, the content is erased and the picture data in the considered area that contains the current considered point is stored to said picture data storing means.

36. The transmitting apparatus as set forth in claim 35,

wherein said controlling means improves the resolutions of the picture data that is read from said picture data storing means.

37. The transmitting apparatus as set forth in claim 1,

wherein the control information is used for a charging process.

38. The transmitting apparatus as set forth in claim 2,

wherein the picture data is object encoded.

39. A receiving apparatus for receiving data transmitted from a transmitting apparatus, comprising:

transmitting means for transmitting control information to the transmitting apparatus that controls resolutions in at least two directions of the temporal direction, the spatial direction, and the level

direction of the data corresponding to the control information;

receiving means for receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting means for outputting the data received by said receiving means.

40. The receiving apparatus as set forth in claim 39,

wherein the data is picture data, and

wherein said outputting means is displaying means for displaying the picture data.

41. The receiving apparatus as set forth in claim 40, further comprising:

considered point detecting means for detecting a considered point of the user from the picture data displayed by said displaying means,

wherein said transmitting means transmits the considered point as the control information to the transmitting apparatus.

42. The receiving apparatus as set forth in claim 41,

wherein said considered point detecting means detects the position designated by said designating means as the considered point.

43. The receiving apparatus as set forth in claim

40, further comprising:

picture data storing means for storing picture data received by said receiving means; and

controlling means for causing picture data stored in said picture data storing means to be displayed by said displaying means when the resolutions of the picture data stored in said picture data storing means are higher than the resolutions of the picture data received by said receiving means.

44. The receiving apparatus as set forth in claim 43,

wherein said controlling means causes the picture data received by said receiving means to be overwritten to said picture data storing means the picture data received by said receiving means to be displayed by said displaying means when the resolutions of the picture data stored in said picture data storing means are lower than the resolutions of the picture data received by said receiving means, the picture data stored in said picture data storing means corresponding to the picture data received by said receiving means.

45. The receiving apparatus as set forth in claim 39,

wherein the control information is used for a charging process.

46. A transmitting and receiving apparatus having a transmitting apparatus for transmitting data and a

receiving apparatus for receiving the data,

wherein the transmitting apparatus comprises:

control information receiving means for receiving control information transmitted from the receiving apparatus;

controlling means for controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

data transmitting means for transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus, and

wherein the receiving apparatus comprises:

control information transmitting means for transmitting the control information;

data receiving means for receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting means for outputting the data received by said data receiving means.

47. A transmitting apparatus for transmitting data to a receiving apparatus, comprising:

receiving means for receiving control information transmitted from the receiving apparatus;

categorizing means for categorizing the data corresponding to the control information; and

transmitting means for transmitting the data to the receiving apparatus corresponding to the categorized result of the data.

48. The transmitting apparatus as set forth in claim 47,

wherein the data is picture data,

wherein the receiving apparatus displays the picture data transmitted from said transmitting means,

wherein the control information contains a considered point of picture data displayed by the receiving apparatus, and

wherein said categorizing means categorizes the picture data corresponding to a considered area that contains the considered point of the picture data.

49. The transmitting apparatus as set forth in claim 48, further comprising:

still area and moving area determining means for determining whether or not the considered area of the picture data is still or moving; and

continuity determining means for determining whether or not the considered point is continuous in the temporal direction and the spatial direction,

wherein said categorizing means categorizes the picture data corresponding to the determined results of said still area and moving area determining

means and said continuity determining means.

50. The transmitting apparatus as set forth in claim 49, further comprising:

considered point storing means for storing a considered point that is contained in the considered area that is still and that is continuous in the temporal direction and the spatial direction and a considered point that is contained in the considered area that is moving and that is continuous in the temporal direction and the spatial direction; and

category identifier adding means for obtaining a category identifier added to a considered point stored in said considered point storing means and adding the category identifier to the considered point.

51. The transmitting apparatus as set forth in claim 50,

wherein in the case that the current considered point is in the considered area that is still and that is continuous in the temporal and spatial directions, when an immediately preceding considered point stored in said considered point storing means is contained in the considered area that is still and that is continuous in the temporal and spatial directions, said category identifier adding means obtains a category identifier added to the current considered point corresponding to the relation of the spatial positions between the current considered

point and the area that contains the immediately preceding considered point.

52. The transmitting apparatus as set forth in claim 50,

wherein in the case that the current considered point is in the considered area that is moving and that is continuous in the temporal and spatial directions, when an immediately preceding considered point stored in said considered point storing means is contained in the considered area that is moving and that is continuous in the temporal and spatial directions, said category identifier adding means obtains a category identifier added to the current considered point corresponding to the similarity of a predetermined feature amount of the considered area that contains the current considered point and that of the considered area that contains the immediately preceding considered point.

53. The transmitting apparatus as set forth in claim 50,

wherein said categorizing means categorizes a predetermined area of the picture data as one object corresponding to the density of considered points stored in said considered point storing means.

54. The transmitting apparatus as set forth in claim 53,

wherein said categorizing means categorizes a

predetermined area of the picture data as one object corresponding to the density of considered points assigned the same category identifier, stored in said considered point storing means, and contained in the considered area that is still.

55. The transmitting apparatus as set forth in claim 53,

wherein said categorizing means categorizes a predetermined area of the picture data as one object corresponding to the density of considered points stored in said considered point storing means, contained in the considered area that is moving, assigned the same category identifier, and motion compensated.

56. The transmitting apparatus as set forth in claim 49,

wherein said still area and moving area determining means determines whether a considered area that contains the current considered point is still or moving corresponding to the difference between the considered area that contains the considered point of the current frame and the considered area that contains the considered point of a past frame.

57. The transmitting apparatus as set forth in claim 49,

wherein said continuity determining means determines whether or not the current considered point

is continuous in the temporal and spatial directions corresponding to the time difference between the current considered point and a past considered point.

58. The transmitting apparatus as set forth in claim 53,

wherein said controlling means improves the resolutions of the area categorized as the object.

59. The transmitting apparatus as set forth in claim 49,

wherein said continuity determining means determines whether or not the current considered point is continuous corresponding to the distances in the temporal direction and the spatial direction between the current considered point and a past considered point at which the same still area and moving area determined result as the considered area that contains the current considered point is obtained.

60. The transmitting apparatus as set forth in claim 59,

wherein said categorizing means categorizes the picture data corresponding to weighted values for the distances in the temporal direction and the spatial direction.

61. The transmitting apparatus as set forth in claim 59, further comprising:

picture data storing means for storing picture data in the considered area that contains a

considered point that is continuous in the temporal direction and the spatial direction.

62. The transmitting apparatus as set forth in claim 61,

wherein when the current considered point is not continuous in the temporal direction and the spatial direction, after the content of said picture data storing means is read, the content is erased and the picture data in the considered area that contains the current considered point is stored to said picture data storing means.

63. The transmitting apparatus as set forth in claim 62,

wherein said controlling means improves the resolutions of the picture data that is read from said picture data storing means.

64. The transmitting apparatus as set forth in claim 47,

wherein the control information is used for a charging process.

65. The transmitting apparatus as set forth in claim 48,

wherein the picture data is object encoded.

66. A transmitting method for transmitting data to a receiving apparatus, comprising the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus.

67. A receiving method for receiving data transmitted from a transmitting apparatus, comprising the steps of:

transmitting control information to the transmitting apparatus that controls resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data corresponding to the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the receiving step.

68. A transmitting and receiving method having a process of a transmitting apparatus for transmitting data and a process of a receiving apparatus for receiving the data,

wherein the process of the transmitting apparatus comprises the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus, and

wherein the process of the receiving apparatus comprises the steps of:

transmitting the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the data receiving step.

69. A transmitting method for transmitting data to a receiving apparatus, comprising the steps of:

receiving control information transmitted from the receiving apparatus;

categorizing the data corresponding to the

control information; and

transmitting the data to the receiving apparatus corresponding to the categorized result of the data.

70. A record medium for recording a program that causes a computer to perform a transmitting process for transmitting data to a receiving apparatus, the transmitting process comprising the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus.

71. A record medium for recording a program that causes a computer to perform a receiving process for receiving data transmitted from a transmitting apparatus, the receiving process comprising the steps of:

transmitting control information to the transmitting apparatus that controls resolutions in at least two directions of the temporal direction, the

spatial direction, and the level direction of the data corresponding to the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the receiving step.

72. A record medium for recording a program that causes a computer to perform a transmitting process of a transmitting apparatus for transmitting data and a receiving process of a receiving apparatus for receiving the data,

wherein the transmitting process of the transmitting apparatus comprises the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus, and

wherein the receiving process of the

receiving apparatus comprises the steps of:

transmitting the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the data receiving step.

73. A record medium for recording a program that causes a computer to perform a transmitting process for transmitting data to a receiving apparatus, the transmitting process comprising the steps of:

receiving control information transmitted from the receiving apparatus;

categorizing the data corresponding to the control information; and

transmitting the data to the receiving apparatus corresponding to the categorized result of the data.

74. A signal for containing a program that causes a computer to perform a transmitting process for transmitting data to a receiving apparatus, the transmitting process comprising the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial

direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus.

75. A signal for containing a program that causes a computer to perform a receiving process for receiving data transmitted from a transmitting apparatus, the receiving process comprising the steps of:

transmitting control information to the transmitting apparatus that controls resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data corresponding to the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the receiving step.

76. A signal for containing a program that causes a computer to perform a transmitting process of a transmitting apparatus for transmitting data and a receiving process of a receiving apparatus for receiving the data,

wherein the transmitting process of the transmitting apparatus comprises the steps of:

receiving control information transmitted from the receiving apparatus;

controlling the resolutions in at least two directions of the temporal direction, the spatial direction, and the level direction of the data transmitted to the receiving apparatus corresponding to the control information; and

transmitting the data of which the resolutions in at least two directions have been controlled corresponding to the control information to the receiving apparatus, and

wherein the receiving process of the receiving apparatus comprises the steps of:

transmitting the control information;

receiving the data transmitted from the transmitting apparatus, the resolutions of the data having been controlled in at least two directions of the data; and

outputting the data received at the data receiving step.

77. A signal for containing a program that causes a computer to perform a transmitting process for transmitting data to a receiving apparatus, the transmitting process comprising the steps of:

receiving control information transmitted

from the receiving apparatus;

categorizing the data corresponding to the control information; and

transmitting the data to the receiving apparatus corresponding to the categorized result of the data.